

## DECORATIVE WALLS FLOORS AND CEILINGS

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Equivalents:

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### Abstract

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## Description

(54) DECORATIVE WALLS, FLOORS AND CEILINGS

(71) I, DAVID KENNETH JOHN

RICHARDSON, a British subject, of The

Cottage, Shepperdine House, Thornbury, formerly of 21 Maidstone Street, Bedminster, Bristol, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to decorative walls, floors and ceilings.

According to one aspect of the present invention there is provided a decorative wall, floor or ceiling element in the form of a panel, tile or block penetrated by elongate light-conducting members which extend in their longitudinal directions transversely between two opposite main faces of the element and, when the latter is illuminated from behind one of those faces, give rise to a lighting effect visible from in front of the other of those faces.

According to another aspect of the invention, there is provided a wall, floor or ceiling comprising at least one element such as defined in the preceding paragraph. In the case of a ceiling, at least one light source can be arranged in a cavity above the ceiling to provide the illumination required to produce a lighting effect visible from beneath the ceiling. Similarly, at least one light source can be arranged behind a wall or under a floor. Each of the members could extend beyond at least one of the main faces of the element. Each of the members could be a light-conducting rod.

In one example of a possible decorative ceiling embodying the present invention a suspended ceiling is constructed from ceiling tiles of any standard type, for example fibreglass tiles. Typically, the tiles may be 112" or 5/8" thick. Before the tiles are put up, each tile is first drilled at desired locations so as to form holes extending transverse to the plane of the tile, and light-conducting rods of corresponding diameters are inserted one in each hole. At the front of each tile, the rods may be flush with the tile surface or may protrude a little, for example by between 1/4" to 1". At the rear of each tile, the light-conducting rods are arranged to protrude to some extent for example by 1 1/2". Typically, the rods employed may have a diameter of for example 1/4". If necessary, the rods can be glued in position in the appropriate holes drilled in the tiles.

The light-conducting rods are preferably each composed of a bundle of parallel optical fibres, for example nylon fibres.

Alternatively, the rods may for instance be rods of undivided form made of high-impact polystyrene, perspex or other acrylic or glass.

Spot-lights are mounted in a cavity above the suspended ceiling. These serve to direct stationary or mobile beams of a desired colour on to the protruding rod ends above the suspended ceiling, thereby giving rise to a lighting effect visible from beneath the suspended ceiling. The particular effect achieved evidently depends upon the distribution of the light-conducting rods and the direction and colour of each beam. The beams may be arranged to be on simultaneously. Alternatively, by means of a suitable switching unit, the spot-lights may be controlled, either automatically or at will, so that different beams are on at different times. Further, means may be provided, either selective or automatic, for varying the direction and/or colour of one or more of the spot-light beams. Moreover, variation of the spot-light beams may be controlled in co-ordination with or in dependence on a reproduction system serving to produce music or other sound in the area beneath the suspended ceiling. Thus, the lighting effect observed will vary with the music or other sound.

If the light-conducting rods protrude beyond the front surfaces of the tiles, a three-dimensional lighting effect can be achieved. Different rods may of course be arranged to protrude to different extents.

In the case of a wall or floor according to the invention in which the light-conducting members are light-conducting rods, each of the rods may be composed of a bundle of parallel optical fibres, or alternatively be of undivided form made of high-impact polystyrene, perspex or other acrylic, or glass.

Spot-lights could be mounted behind the wall or below the floor to direct stationary or mobile beams of a desired colour on to the rear rod ends, thereby giving rise to a visible lighting effect. A switching unit could be provided, whereby the spot-lights may be controlled, either automatically or at will, so that different beams are on at different times. Moreover, there could be means, either selective or automatic, for varying the direction and/or colour of one or more of the spot-light beams. The wall or floor could be constructed so that variation of the spot-light beams may be controlled in coordination with or in dependence on a reproduction system serving to produce music or other sound.

The Invention will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a schematic sectional view of part of a suspended ceiling, and  
Figure 2 is an edge view of a possible ceiling element for such a ceiling.

The ceiling illustrated in Figure 1 comprises several banks 2 of spot-lights. Each bank 2 consists of four adjacent spot-lights A, B, C and D, producing light beams of different colours. The spot-lights A, B, C and D may for example produce red, yellow, green and blue light beams, respectively.

The spot-light banks 2 are secured to a ceiling proper 1 so as to direct their beams obliquely on to a suspended ceiling composed of ceiling tiles 3. Some or all of the tiles 3 have light-conducting rods 4 extending through them perpendicular to the plane of the tiles so as to protrude above and below the tiles. These tiles with rods may be constructed as hereinbefore described.

By means of switch-gear not shown, the spot-lights may be controlled so that only beams of one colour are directed on to the suspended ceiling at any time, but the colour is changed in accordance with a predetermined sequence. However, the spot-lights may alternatively be controlled so that different areas of the suspended ceiling are illuminated by different colours and the colour of each region changes from time to time.

It will be appreciated that the light beams directed obliquely onto the suspended ceiling are incident on the upwardly protruding rod ends in directions transverse to the rod axes. The spot-lights may however be mounted so that the light beams are directed substantially horizontally onto the upper rod ends.

Figure 2 shows a ceiling tile 5 provided with light-conducting rods 6 and 7, for example rods made of bundled nylon fibres.

The upper rod ends are obliquely cut, while the lower rod ends are radially cut. The upper end faces of the rods 6 and 7 face in different directions, the upper end face of the rod 6 being arranged so as to receive light preferentially from a beam 8 of one colour, and the upper end face of the rod 7 being arranged so as to receive light preferentially from a beam 9 of another colour.

Seen from below the ceiling tile 5, the rods 6 and 7 appear of different colour. The upper and lower end faces of the rods 6 and 7 are preferably polished, in order to enhance light transmission through them. For the same reason, where rods of polystyrene or perspex are used, their end faces are also preferably polished, if possible.

In a suspended ceiling composed of ceiling tiles similar to the tile 5, the obliquely cut upper end faces of the rods can be orientated so that over a whole ceiling region there are distributed rods with upper end faces directed towards a light source of one colour, rods with upper end faces directed towards a light source of another colour, and so on. When viewed from beneath, the whole region will then change colour as the different-coloured light sources are switched on in turn, each rod being preferentially associated with a particular colour. If differently-coloured light sources are arranged to be on at the same time, then rods respectively illuminated preferentially in different colours will be seen interspersed over the whole region.

Fibre-optic rods are used here since polystyrene or perspex rods are not adequately selective to differently-coloured light beams and so would not permit such good colour contrast in cases where differently-coloured light beams are on simultaneously.

Although the example described with reference to the drawing is of a ceiling, it will be appreciated that the example may be adapted to be a wall or floor. Incidentally, the switch-gear in such a ceiling, wall or floor may be such that, in the event of a power failure in an installation where it is installed, the rods 4 are

continuously illuminated with one colour.

**WHAT I CLAIM IS:**

1. A decorative wall, floor or ceiling element in the form of a panel, tile or block penetrated by elongate light-conducting members which extend in their longitudinal directions transversely between two oppo

**\*\*WARNING\*\* end of DESC field may overlap start of CLMS \*\***

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## Claims

\*\*WARNING\*\* start of CLMS field may overlap end of DESC \*\*.

beyond the front surfaces of the tiles, a three-dimensional lighting effect can be achieved. Different rods may of course be arranged to protrude to different extents.

In the case of a wall or floor according to the invention in which the light-conducting members are light-conducting rods, each of the rods may be composed of a bundle of parallel optical fibres, or alternatively be of undivided form made of high-impact polystyrene, perspex or other acrylic, or glass.

Spot-lights could be mounted behind the wall or below the floor to direct stationary or mobile beams of a desired colour on to the rear rod ends, thereby giving rise to a visible lighting effect. A switching unit could be provided, whereby the spot-lights may be controlled, either automatically or at will, so that different beams are on at different times. Moreover, there could be means, either selective or automatic, for varying the direction and/or colour of one or more of the spot-light beams. The wall or floor could be constructed so that variation of the spot-light beams may be controlled in coordination with or in dependence on a reproduction system serving to produce music or other sound.

The Invention will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a schematic sectional view of part of a suspended ceiling, and  
Figure 2 is an edge view of a possible ceiling element for such a ceiling.

The ceiling illustrated in Figure 1 comprises several banks 2 of spot-lights. Each bank 2 consists of four adjacent spot-lights A, B, C and D, producing light beams of different colours. The spot-lights A, B, C and D may for example produce red, yellow, green and blue light beams, respectively.

The spot-light banks 2 are secured to a ceiling proper 1 so as to direct their beams obliquely on to a suspended ceiling composed of ceiling tiles 3. Some or all of the tiles 3 have light-conducting rods 4 extending through them perpendicular to the plane of the tiles so as to protrude above and below the tiles. These tiles with rods may be constructed as hereinbefore described.

By means of switch-gear not shown, the spot-lights may be controlled so that only beams of one colour are directed on to the suspended ceiling at any time, but the colour is changed in accordance with a predetermined sequence. However, the spot-lights may alternatively be controlled so that different areas of the suspended ceiling are illuminated by different colours and the colour of each region changes from time to time.

It will be appreciated that the light beams directed obliquely onto the suspended ceiling are incident on the upwardly protruding rod ends in directions transverse to the rod axes. The spot-lights may however be mounted so that the light beams are directed substantially horizontally onto the upper rod ends.

Figure 2 shows a ceiling tile 5 provided with light-conducting rods 6 and 7, for example rods made of bundled nylon fibres.

The upper rod ends are obliquely cut, while the lower rod ends are radially cut. The upper end faces of the rods 6 and 7 face in different directions, the upper end face of the rod 6 being arranged so as to receive light preferentially from a beam 8 of one colour, and the upper end face of the rod 7 being arranged so as to receive light preferentially from a beam 9 of another colour.

Seen from below the ceiling tile 5, the rods 6 and 7 appear of different colour. The upper and lower end faces of the rods 6 and 7 are preferably polished, in order to enhance light transmission through them. For the same reason, where rods of polystyrene or perspex are used, their end faces are also preferably polished, if possible.

In a suspended ceiling composed of ceiling tiles similar to the tile 5, the obliquely cut upper end faces of the

rods can be orientated so that over a whole ceiling region there are distributed rods with upper end faces directed towards a light source of one colour, rods with upper end faces directed towards a light source of another colour, and so on. When viewed from beneath, the whole region will then change colour as the different-coloured light sources are switched on in turn, each rod being preferentially associated with a particular colour. If differently-coloured light sources are arranged to be on at the same time, then rods respectively illuminated preferentially in different colours will be seen interspersed over the whole region.

Fibre-optic rods are used here since polystyrene or perspex rods are not adequately selective to differently-coloured light beams and so would not permit such good colour contrast in cases where differently-coloured light beams are on simultaneously.

Although the example described with reference to the drawing is of a ceiling, it will be appreciated that the example may be adapted to be a wall or floor. Incidentally, the switch-gear in such a ceiling, wall or floor may be such that, in the event of a power failure in an installation where it is installed, the rods 4 are continuously illuminated with one colour.

**WHAT I CLAIM IS:**

1. A decorative wall, floor or ceiling element in the form of a panel, tile or block penetrated by elongate light-conducting members which extend in their longitudinal directions transversely between two opposite main faces of the element and, when the latter is illuminated from behind one of those faces, give rise to a lighting effect visible from in front of the other of those faces.
2. A wall, floor or ceiling element according to claim 1, wherein each of the members extends beyond at least one of the main faces of the element.
3. A wall, floor or ceiling element according to claim 1 or 2, wherein the members are light-conducting rods.
4. A wall, floor or ceiling comprising at least one element as defined in any preceding claim.
5. A ceiling according to claim 4, wherein at least one light source is arranged in a cavity above the ceiling to provide the illumination required to produce a lighting effect visible from beneath the ceiling.
6. A wall or floor according to claim 4, wherein at least one light source is arranged behind the wall or under the floor to provide the illumination required to produce the visible light effect.
7. A ceiling according to claim 5 wherein the members are as defined in claim 3, comprising a suspended ceiling constructed from ceiling tiles, each of which, before being put up, was drilled at desired locations so as to form holes extending transverse to the plane of the tile, and the lightconducting rods were inserted one in each hole, the rods being of corresponding diameters to the holes.
8. A ceiling according to claim 7, wherein the rods are as defined in claim 2 at the front of each tile the rods being flush with the tile surface or protruding a little and at the rear of each tile the rods being arranged to protrude to some extent.
9. A ceiling according to claim 7 or 8, wherein the light-conducting rods are each composed of a bundle of parallel optical fibres.
10. A ceiling according to claim 7 or 8, wherein the rods are rods of undivided form made of high-impact polystyrene, perspex or other acrylic, or glass.
11. A ceiling according to any of claims 7 to 10, wherein spot-lights are mounted in a cavity above the suspended ceiling to direct stationary or mobile beams of a desired colour on to the protruding rod ends above the suspended ceiling, thereby giving rise to a lighting effect visible from beneath the suspended ceiling.
12. A ceiling according to claim 11, including a switching unit, whereby the spot-lights may be controlled, either automatically or at will, so that different beams are on at different times.
13. A ceiling according to claim 12, including means, either selective or automatic, for varying the direction

and/or colour  
of one or more of the spot-light beams.

14. A ceiling according to claim 13,  
constructed so that variation of the spot  
light beams may be controlled in co  
ordination with or in dependence on a  
reproduction system serving to produce  
music or other sound in the area beneath the  
suspended ceiling.

15. A wall or floor according to claim 6, wherein the members are as defined in claim 3, each of the rods  
being composed of a bundle of parallel optical fibres.

16. A wall or floor according to claim 6, wherein the members are as defined in claim 3, each of the rods  
being of undivided form made of high-impact polystyrene, perspex or other acrylic, or glass.

17. A wall or floor according to claims  
15 or 16, wherein spot-lights are mounted  
behind the wall or below the floor to direct  
stationary or mobile beams of a desired colour on to the rear rod ends, thereby giving rise to the visible  
lighting effect.

18. A wall or floor according to claim  
17, including a switching unit whereby the  
spot-lights may be controlled, either automatically or at will, so that different beams  
are on at different times.

19. A wall or floor according to claim  
18, including means, either selective or automatic, for varying the direction and/or colour of one or more of  
the spot-light beams.

20. A wall or floor according to claim  
19, constructed so that variation of the  
spot-light beams may be controlled in co  
ordination with or in dependence on a  
reproduction system serving to produce  
music or other sound.

21. A decorative ceiling element, or ceiling, substantially as herein described with reference to the  
accompanying  
drawing.

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1561142      COMPLETE SPECIFICATION  
1 SHEET      *This drawing is a reproduction of  
the Original on a reduced scale*

FIG. 1

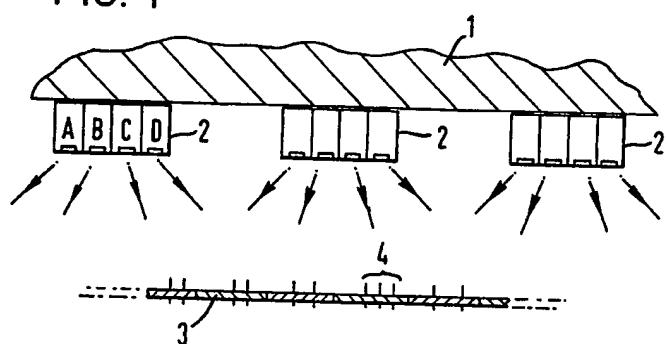


FIG. 2

